

CIRCULAR No. 145  
(DECEMBER, 1915)

## SUGGESTIONS TO POULTRYMEN CONCERNING CHICKEN-POX

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### PREVENTION

Chicken-pox and the infections known as avian diphtheria, canker and swell-head, which usually accompany it, are so contagious that few large flocks permanently escape their ravages. It has been demonstrated at the University Farm, Davis, California, and elsewhere that flocks of fowls raised from the time of hatching in new buildings, on ground not previously used for poultry raising, do not develop these diseases, but it is believed that disease may be introduced by infected fowls or by apparently healthy fowls brought in from infected flocks or by wild birds. Every poultryman should be constantly on the watch for cases of these diseases for the following reasons: *First*, chicken-pox is so highly contagious and the fowls live in such close contact with each other that once the disease gains entrance it spreads very rapidly; *Second*, poultry are often kept in such large flocks that it is difficult for the attendant to note the condition of the individual fowls. On this account the disease may secure a strong foothold in the flock before it is discovered.

The preventive procedure consists of (a) general preventive measures, and (b) preventive vaccination.

(a) *General Preventive Measures*.—1. The isolation of all diseased fowls from the flock and the removal and burning of all dead fowls.

2. The cleaning and disinfecting of the houses and yards. The resistance of chicken-pox virus to the action of disinfectants makes it imperative to disinfect the houses and yards thoroughly.

3. The quarantining for two weeks of all the new stock and of birds returned from poultry exhibits.

4. The careful examination of *each* fowl occasionally, if the disease is present in the neighborhood.

(b) *Preventive Vaccination.*—The immunization of fowls against chicken-pox has been practiced by a number of investigators,\* and at this Experiment Station during the past year a method has been developed which gives such good results that its adoption by practical poultrymen seems warranted.

*When to Vaccinate against Chicken-pox.*—This Experiment Station advises all poultry owners to vaccinate† their fowls against chicken-pox as soon as its presence in the flock is noticed. The disease is most prevalent in the late fall and winter. Since chicken-pox is easily recognized and spreads slowly, the careful poultryman will always discover its presence before many birds are affected and, if the fowls are immediately vaccinated, the outbreak can be checked with very slight loss to the owner. For this reason this Station advises the poultryman not to go to the expense of vaccination before the disease is actually present in his flock.

The vaccine is prepared in such a manner that there is little or no danger of its use causing chicken-pox in healthy fowls. Neither does the vaccine seem to have any harmful effect on the general condition of the birds. The egg yield, however, will be somewhat decreased for a few days following vaccination, but this decrease will be no greater than would be expected if the fowls were handled for any other reason.

*Method of Vaccination.*—The vaccine is administered by injecting it beneath the skin with a hypodermic syringe. Two doses of one cubic centimeter each are given five to seven days apart. The most convenient place for administration is beneath the skin of the side under the right thigh, the skin at that point being comparatively free from feathers. The left wing is held back, the fowl laid on its left side, and the right wing and leg and feathers held back with the last three fingers of the left hand. The exposed skin is then cleansed with a piece of

\* Manteufel, Arb. d. Kaiserl. Gesundh.-Amtes, XXXIII (1910), 305. Hadley and Beach, Proc. Am. Vet. Med. Assn., 1913, p. 704. Giltner, Ann. Rep. Mich. State Board of Agr., 1914, p. 215. Haring and Kofoid, Am. Vet. Rev., Vol. XL (1912), p. 717; Proc. Am. Vet. Med. Assn., 1911, p. 413. Mack and Records, Agr. Exp. Station, University of Nevada, Reno, Nev.

† The method of preparing the vaccine is as follows: One-half gram of chicken-pox scabs to 100 cc. of physiological salt solution is the proportion used. The scabs are first weighed out and ground in a sterile mortar with a small amount of the sterile salt solution until they are pulverized. This material is then filtered through absorbent cotton into a sterile flask or bottle and the remainder of the salt solution poured through the filter so as to wash out as much of the pulverized material as possible. The flask is then stoppered, placed in a water bath and heated at a constant temperature of 55° C. for one hour. The vaccine is now ready for use. It is very essential that the vaccine be used as soon after preparation as possible. Since no preservative is used it will deteriorate if allowed to stand. If old vaccine is used poor results in the form of abscesses at the point of inoculation and the death of the fowl are to be expected.



Fig. 1.—Condition of a vaccinated fowl twelve days after inoculation with chicken-pox virus.



Fig. 2.—Condition of non-vaccinated fowl twelve days after inoculation with chicken-pox virus. The same virus was used for both these fowls.

cotton saturated with disinfectant solution (2 per cent solution of compound solution of cresol) and picked up with the thumb and forefinger of the left hand. Then with the right hand the syringe needle is inserted beneath the skin and the proper dose injected. A syringe of six cubic centimeter capacity is well suited for this work. The needle should be 16 or 18 gauge and from 2 to 2½ inches in length. With a little practice one man with an assistant to catch the birds can vaccinate from 100 to 150 per hour.

*Precautions to be Observed.*—1. **The vaccine is supplied in an un-preserved condition and will soon decompose and become unfit for use. Therefore, if possible, it should be used within three days. If old, decomposed vaccine is used bad results will follow.**

2. Vaccine should be kept in a cool place, on ice if practicable, until used and only one bottle opened at a time.

3. A small, wide-mouthed, covered vessel, such as a quarter-pint milk bottle or a jelly-glass, should be provided as a vaccine container from which to fill the syringe. This should be sterilized by boiling before it is used and should be kept covered at all times except when the syringe is being filled.

4. The syringe should be sterilized by boiling, or by soaking for several minutes in a ten per cent solution of compound solution of cresol, followed by rinsing with boiled water.

5. All diseased fowls should be removed from the flock and treated.

6. The immunizing effect of the vaccine does not take place immediately; therefore, the fowls already infected at the time of vaccination or soon after will in most cases develop chicken-pox lesions. Such cases are usually very mild and will soon recover if the fowls are removed from the flock and the lesions treated.

7. The hypodermic needle should be inserted *just under the skin* and not in the muscle.

#### TREATMENT

Of the various kinds of disinfectants recommended for the treatment of this disease tincture of iodine has been found to be the most satisfactory. The scabs which form on the tumors of the comb, wattles or skin should be removed with a dull knife or a pair of forceps and tincture of iodine applied to the exposed surface.

Collections of exudate on the mucous membrane of the mouth should be removed with forceps or a curette and the exposed membrane treated with tincture of iodine. All collections of exudate within the





Fig. 3.—This figure shows the method of holding a fowl and administering chicken-pox vaccine.



Fig. 4.—Apparatus required for vaccination: 1. Large bottle of vaccine. 2. Pan of disinfectant for cleansing the skin at the point of injection. 3. Hypodermic syringe. The syringe shown is of 6 cc. capacity and provided with a burr on the plunger to regulate the dose. 4. Small bottle of vaccine from which the syringe is filled.

eyelids can usually be removed by pressing with the thumb and finger tips around the eye. If any of the exudate should adhere to the cornea it should be removed with forceps and it may sometimes be necessary to use forceps also in removing the exudate from beneath the third eyelid at the inner corner of the eye. Afterwards drop a small amount of tincture of iodine into the eye.

The tincture of iodine can be applied most conveniently in all cases with a medicine dropper. Treatment should be repeated as often as the scabs or exudate reform. Any fowl that does not show a marked improvement in condition after three or four treatments will usually recover very slowly. In such cases, unless the fowl be very valuable for show, breeding or other purposes, it is more economical to destroy it than to give further treatment.

Collections of exudate within the nasal sinuses always produce marked swellings of the face. This condition is relieved by making an incision through the skin over the swelling, removing all the exudate with a pair of forceps or curette, and then packing the cavity with absorbent cotton saturated with tincture of iodine. The cotton pack is necessary to keep the incision through the skin from healing too rapidly. If not packed, the wound will quickly heal, the exudate reform and no benefit be derived from the operation. The pack also assists in controlling the hemorrhage which is always severe. When the hemorrhage is unusually severe, it should be checked by the application of a strong caustic, such as silver nitrate. The cotton pack should be removed, the wound cleansed and a new pack put in every two or three days as long as the exudate continues to form. When, upon removal of the pack, it is found that no exudate has formed, the pack may be left out and the wound allowed to heal. The administration of vaccine in addition to local treatment will shorten the course of the disease and decrease the mortality from all types of disease.

Figure 5 illustrates desirable instruments to have on a poultry ranch for the treatment of chicken-pox and "canker." The forceps with "spoon-shaped" jaws are unequaled for removing canker from the tongue and larynx. The small forceps are useful in removing chicken-pox scabs, cheesy material from the eyes and canker from the cleft palate and from the inside of the larynx. The scalpel is necessary to make an incision through the skin to remove collections of cheesy material from within the nasal sinuses. The next instrument, a curette, is for use in removing "canker" from the roof and sides of the mouth. The iodine is a very efficient remedy to apply to the raw surfaces after removing chicken-pox scabs, "canker" from the mouth, and cheesy



Fig. 5.--Desirable instruments and supplies to have on a poultry ranch for treatment of chicken-pox and "canker."

material from the eyes and nasal sinuses. This can best be applied with the pipette or medicine dropper. The absorbent cotton is used to remove blood before applying iodine and to plug the opening after the removal of cheesy exudate from the nasal sinuses.

The catching coop, illustrated on page 12 of Circular No. 142 of this Station, will be found convenient for vaccinating work.

*Announcement Concerning the Sale of Chicken-pox Vaccine at Cost.*—The University of California manufactures chicken-pox vaccine and will sell it at actual cost of production to any resident of the state who is engaged in poultry raising, providing the applicant furnishes satisfactory evidence that chicken-pox exists among his fowls. At present the cost is three-quarters of a cent per dose (1 cc.). If the vaccine is sold to any person for use on fowls other than his own it is with the understanding that it will be furnished to the owner at the same price charged by this Station. The vaccine will be furnished to applicants in two lots, the shipments being made five to seven days apart. This is done so that freshly prepared vaccine may be had for each vaccination. Hypodermic syringes with which to administer the vaccine can be procured from the University at a cost of \$3.00.

All applicants should specify in writing the amount of vaccine desired or the number of fowls to be treated. In case vaccine is ordered by telephone or telegraph a confirming order signed by the owner of the fowls should be sent by mail. Vaccine will be shipped only when cash accompanies the order, or C. O. D. When not impossible, orders will be shipped the same day they are received.

It is important that this station receive information concerning the results obtained from the use of the vaccine, and for this reason an application blank and report cards are enclosed with each shipment. The application is to be filled out and returned immediately in confirmation of the order, and the report cards are to be forwarded at intervals of two weeks until four cards have been sent.

**Address all communications to the**

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